



STIC Search Report

EIC 1700

STIC Database Tracking Number: 174741

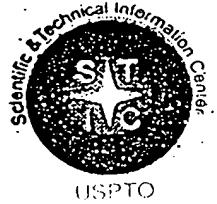
TO: Gregg Cantelmo
Location: Rem 6B71
Art Unit : 1745
December 28, 2005

Case Serial Number: 10/625686

From: Kathleen Fuller
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov

Search Notes

FD 7/24/02
↓
7/29/02



STIC Search Results Feedback Form

EIC/1700

Questions about the scope or the results of the search? Contact the EIC searcher or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: Example: 1713

➤ Relevant prior art found, search results used as follows:

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- Foreign Patent(s)
- Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining patentability or understanding the invention.

Comments:

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Anekwe, Imelda (ASRC)

17474

From: Cantelmo, Gregg
Sent: Tuesday, December 20, 2005 10:42 AM
To: STIC-EIC1700
Subject: Database Search Request, Serial Number: 10/625686

Requester:
Gregg Cantelmo (TC1700)

Art Unit:
1745

Employee Number:
75777

Office Location:
REM 6B71

Phone Number:
571-272-1283

Mailbox Number:

Case serial number:
10/625686

Class / Subclass(es):

Earliest Priority Filing Date:

Format preferred for results:
Paper

Search Topic Information:
Please search the composition of claim 21 only.

Special Instructions and Other Comments:

SCIENTIFIC REFERENCE BR
Sci & Tech Inf. Ctr.
DEC 20 REC'D
Pat. & T.M. Office

CANTELMO 10/625686 12/28/2005

Page 1

=> file reg

FILE 'REGISTRY' ENTERED AT 14:20:42 ON 28 DEC 2005
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STRUCTURE FILE UPDATES: 27 DEC 2005 HIGHEST RN 870676-46-3
DICTIONARY FILE UPDATES: 27 DEC 2005 HIGHEST RN 870676-46-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2005

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*

Structure search iteration limits have been increased. See HELP SLIMITS
for details.

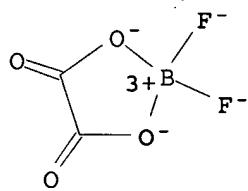
REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document. For information
on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> d 12

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2005 ACS on STN
RN 409071-16-5 REGISTRY
ED Entered STN: 30 Apr 2002
CN Borate(1-), [ethanedioato(2-)-κO1,κO2]difluoro-, lithium,
(T-4)- (9CI) (CA INDEX NAME)
MF C2 B F2 O4 . Li
CI CCS
SR CA
LC STN Files: CA, CAPLUS, CASREACT, USPAT2, USPATFULL
CRN (768353-04-4)

Claim 21



● Li⁺

21 REFERENCES IN FILE CA (1907 TO DATE)
21 REFERENCES IN FILE CAPLUS (1907 TO DATE)

21 references to
the compound

=> file hcapl
FILE 'HCAPLUS' ENTERED AT 14:21:44 ON 28 DEC 2005
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PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
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FILE COVERS 1907 - 28 Dec 2005 VOL 144 ISS 1
FILE LAST UPDATED: 27 Dec 2005 (20051227/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

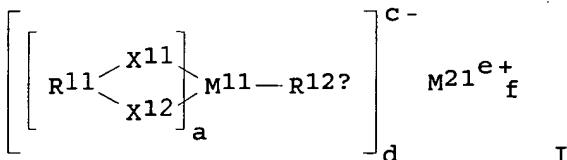
=> s 12

L3 21 L2

=> => d 13 bib abs ind hitstr 1-21

L3 ANSWER 1 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2005:1198250 HCAPLUS
DN 143:463118
TI Long-life electrolytes and lithium secondary batteries therewith showing long cycle life
IN Ihara, Masayuki; Akashi, Hiroyuki; Yamamoto, Akira; Naruse, Yoshiaki
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 27 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005317446	A2	20051110	JP 2004-136184	20040430
PRAI JP 2004-136184		20040430		
GI				



AB The electrolytes contain light metal salts I [R₁₁ = COR₂₁CO [R₂₁ = (halo)alkylene, (halo)arylene], COCO; R₁₂ = halo, (halo)alkyl, (halo)aryl; X₁₁, X₁₂ = O, S; M₁₁ = transition metal, Group IIIB-VB metal; M₂₁ = Al, Group IA or IIA metal; a = 1-4; b = 0-8; c, d, e, f = 1-3] and carbonate ester R₃₁CFX₃₁CO₂R₃₂ (R₃₁ = H, F, C₁₋₃ alkyl; X₃₁ = H, F; R₃₂ = C₁₋₂ alkyl). The electrolytes are resistant against decomposition in anode cells and exhibit high charge efficiency therein.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST lithium secondary battery electrolyte cycle life; fluorine contg carbonate electrolyte solvent secondary battery

IT Battery electrolytes
(electrolytes containing F-containing carbonate esters for Li secondary batteries with long cycle life)

IT Secondary batteries

(lithium; electrolytes containing F-containing carbonate esters for Li secondary batteries with long cycle life)

IT 96-49-1, Ethylene carbonate 378-75-6 382-93-4 383-63-1 399-92-8
426-65-3 431-47-0 433-53-4 453-18-9 459-72-3 28781-85-3
38650-84-9

RL: DEV (Device component use); USES (Uses)
(electrolyte solvents; electrolytes containing F-containing carbonate esters for Li secondary batteries with long cycle life)

IT 21324-40-3, Lithium hexafluorophosphate 409071-16-5

521065-36-1 678966-16-0

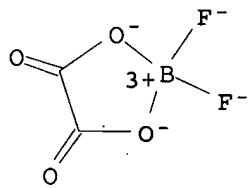
RL: DEV (Device component use); USES (Uses)
(electrolytes; electrolytes containing F-containing carbonate esters for Li secondary batteries with long cycle life)

IT 409071-16-5

RL: DEV (Device component use); USES (Uses)
(electrolytes; electrolytes containing F-containing carbonate esters for Li secondary batteries with long cycle life)

RN 409071-16-5 HCAPLUS

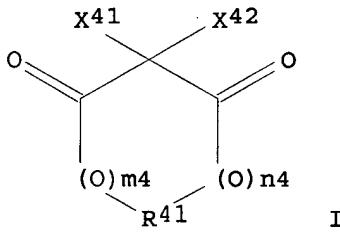
CN Borate(1-), [ethanedioato(2-) -κO₁, κO₂]difluoro-, lithium,
(T-4)- (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:1198021 HCAPLUS
 DN 143:443591
 TI Secondary batteries showing high cycle performance and their electrolytes with good resistance against anodic decomposition
 IN Ihara, Masayuki; Akashi, Hiroyuki; Yamamoto, Akira; Naruse, Yoshiaki
 PA Sony Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 50 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005317403	A2	20051110	JP 2004-134926	20040428
PRAI JP 2004-134926		20040428		
GI				



AB The electrolytes contain compds. R31Om1COCX30X31COOn1R32, R33Om2COCX32X33CX34X35COOn1R32, R35Om3COCX36X37R37CX38X39XOOn3R36, and/or I [X30-X39 = H, halo, C1-10 perfluoroalkyl, essentially containing halo; m1-m4, n1-n4 = 0, 1; R31-R36 = monovalent group other than H; R37 = O, S, SO, SO2, NX (X = monovalent substituent), PZ (Z = monovalent substituent), etc.; R41 = O-, S-, O-, or P-containing group, C1-6 alkylene, etc.] and light metal salts possessing bearing MA bonds (A = transition metals, Group IIIB-VB elements).
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s) : 38
 ST lithium secondary battery decompn resistant electrolyte; halo contg dicarbonyl electrolyte lithium secondary battery; cycle performance anodic decompn prevention battery electrolyte
 IT Battery electrolytes

(light metal salts; anodic decomposition-suppressed electrolytes for secondary Li batteries with good cycle performance)

IT Secondary batteries
 (lithium; anodic decomposition-suppressed electrolytes for secondary Li batteries with good cycle performance)

IT 96-49-1, Ethylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvents; anodic decomposition-suppressed electrolytes for secondary Li batteries with good cycle performance)

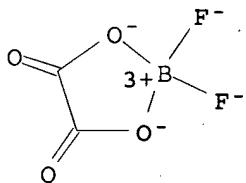
IT 344-14-9 356-36-5 377-71-9 379-95-3 1513-62-8 1960-06-1
 2062-20-6 3107-98-0 21486-05-5 868837-34-7 868837-35-8
 868837-36-9 868837-37-0 868837-38-1 868837-39-2 868837-40-5
 868837-41-6 868837-42-7 868837-43-8 868837-44-9 868837-45-0
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (electrolyte solvents; anodic decomposition-suppressed electrolytes for secondary Li batteries with good cycle performance)

IT 21324-40-3, Lithium hexafluorophosphate 409071-16-5
 521065-36-1 678966-16-0
 RL: DEV (Device component use); USES (Uses)
 (electrolytes; anodic decomposition-suppressed electrolytes for secondary Li batteries with good cycle performance)

IT 409071-16-5
 RL: DEV (Device component use); USES (Uses)
 (electrolytes; anodic decomposition-suppressed electrolytes for secondary Li batteries with good cycle performance)

RN 409071-16-5 HCPLUS

CN Borate(1-), [ethanedioato(2-) -κO₁, κO₂]difluoro-, lithium,
 (T-4) - (9CI) (CA INDEX NAME)



● Li⁺

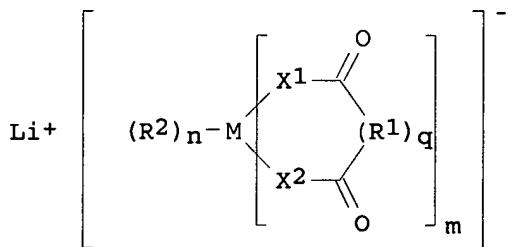
L3 ANSWER 3 OF 21 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:1106347 HCPLUS
 DN 143:389784
 TI Nonaqueous electrolytic solutions, and their secondary lithium batteries showing good cycle performance and storage stability at high temperature
 IN Tsujioka, Shoichi; Kurihara, Yuki; Takeuchi, Shigeo; Takeda, Kazunari
 PA Central Glass Co., Ltd., Japan; Toyama Chemical Industry Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 20 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
PI JP 2005285492	A2	20051013	JP 2004-96475	20040329

PRAI JP 2004-96475

20040329

GI



AB The solns. contain (1) nonaq. solvents, (2) Li salts, and (3) ionic metal complexes I [M = Group IIIB-VB transition metal; R1 = C1-10, (halo)alkylene, C4-20 (halo)arylene; R2 = halo, C1-10 (halo)alkyl, C4-20 (halo)aryl, X3R3; X1-X3 = O, S, NR4; R3, R4 = H, C1-10 (halo)alkyl, C4-20 (halo)aryl; R3R4 may form ring; m = 1-4; n = 0-8; q = 0, 1]. The batteries have (A) cathodes using Li-transition metal composite oxides, and (B) anodes using (B1) carbonaceous materials showing d-value of (002) plane ≤ 0.340 nm in x-ray diffraction, (B2) oxides of elements chosen from Sn, Si, and/or Al, and/or (B3) Li alloys with Sn, Si, and/or Al.

IC ICM H01M010-40

ICS H01M004-02; H01M004-40; H01M004-48; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)**ST** ionic metal complex lithium battery electrolyte; lithium transition metal oxide battery cathode; carbonaceous material lithium battery anode; battery anode lithium aluminum tin alloy; silicon aluminum tin oxide lithium battery anode**IT** Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(anode active mass; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Carbonates, uses

RL: DEV (Device component use); USES (Uses)

(cyclic or linear carbonate esters; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Carboxylic acids, uses

RL: DEV (Device component use); USES (Uses)

(esters, cyclic, nonaq. solvents; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Secondary batteries

(lithium; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Battery anodes

Battery cathodes

Battery electrolytes

(nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Carboxylic acids, uses

RL: DEV (Device component use); USES (Uses)

(unsatd., esters, cyclic, nonaq. solvents; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 7440-44-0, MCMB 25-28, uses 12798-95-7 53680-59-4 66798-39-8
 95535-75-4, Lithium silicide 866552-05-8, Lithium tin silicide
 866552-06-9, Aluminum lithium silicide 866552-07-0, Aluminum lithium tin silicide
 RL: DEV (Device component use); USES (Uses)
 (anode active mass; nonaq. electrolytic solns. containing carbonate esters,
 Li salts, and ionic metal complexes for secondary Li batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); USES (Uses)
 (cathode active mass; nonaq. electrolytic solns. containing carbonate esters,
 Li salts, and ionic metal complexes for secondary Li batteries)

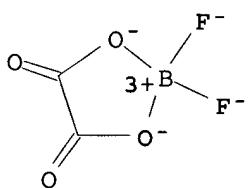
IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-29-2,
 γ -Valerolactone 502-44-3, ϵ -Caprolactone 623-53-0, Ethyl
 methyl carbonate 695-06-7, γ -Caprolactone 872-36-6, Vinylene
 carbonate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium
 hexafluorophosphate 33454-82-9 90076-65-6 132843-44-8 176719-70-3
 189217-56-9 866552-04-7, 4-Vinylethylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic solns. containing carbonate esters, Li salts, and
 ionic metal complexes for secondary Li batteries)

IT 409071-16-5 521065-36-1 866596-75-0
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (nonaq. electrolytic solns. containing carbonate esters, Li salts, and
 ionic metal complexes for secondary Li batteries)

IT 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-31-5, Tin,
 uses
 RL: DEV (Device component use); USES (Uses)
 (oxides containing, anode active mass; nonaq. electrolytic solns. containing
 carbonate esters, Li salts, and ionic metal complexes for secondary Li
 batteries)

IT 409071-16-5
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (nonaq. electrolytic solns. containing carbonate esters, Li salts, and
 ionic metal complexes for secondary Li batteries)

RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-)-
 κ O1, κ O2]difluoro-, lithium,
 (T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 4 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:1106346 HCAPLUS
 DN 143:389783
 TI Nonaqueous electrolytic solutions, and their secondary lithium batteries
 showing good cycle performance and storage stability at high temperature

IN Tsujioka, Shoichi; Kurihara, Yuki; Takeuchi, Shigeo; Takeda, Kazunari
 PA Central Glass Co., Ltd., Japan; Toyama Chemical Industry Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

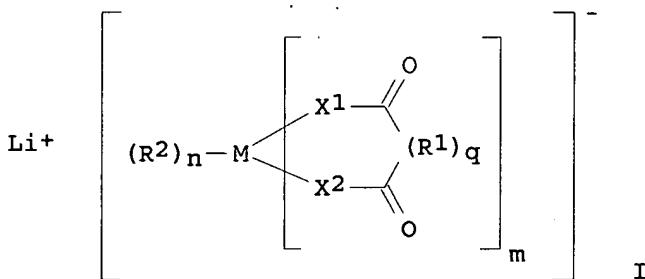
DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005285491	A2	20051013	JP 2004-96474	20040329
PRAI	JP 2004-96474			20040329	

GI



AB The solns. contain (1) nonaq. solvents comprising cyclic carbonate esters, linear carbonate esters, and optional unsatd. carbonate esters, (2) Li salts, and (3) ionic metal complexes I [M = Group IIIB-VB transition metal; R1 = C1-10 (halo)alkylene, C4-20 (halo)arylene; R2 = halo, C1-10 (halo)alkyl, C4-20 (halo)aryl, X3R3; X1-X3 = O, S, NR4; R3, R4 = H, C1-10 (halo)alkyl, C4-20 (halo)aryl; R3R4 may form ring; m = 1-4; n = 0-8; q = 0, 1]. The batteries have (A) cathodes using Li-transition metal composite oxides, and (B) anodes using (B1) carbonaceous materials showing d-value of (002) plane ≤ 0.340 nm in x-ray diffraction, (B2) oxides of elements chosen from Sn, Si, and/or Al, and/or (B3) Li alloys with Sn, Si, and/or Al.

IC ICM H01M010-40

ICS H01M004-02; H01M004-40; H01M004-48; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST ionic metal complex carbonate ester lithium battery electrolyte; lithium transition metal oxide battery cathode; carbonaceous material lithium battery anode; battery anode lithium aluminum tin alloy; silicon aluminum tin oxide lithium battery anode

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(anode active mass; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Carbonates, uses

RL: DEV (Device component use); USES (Uses)

(cyclic or linear carbonate esters; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Secondary batteries

(lithium; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT Battery anodes

Battery cathodes

Battery electrolytes

(nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 7440-44-0, MCMB 25-28, uses 12798-95-7 53680-59-4 66798-39-8
 95535-75-4, Lithium silicide 866552-05-8, Lithium tin silicide
 866552-06-9, Aluminum lithium silicide 866552-07-0, Aluminum lithium tin silicide

RL: DEV (Device component use); USES (Uses)
 (anode active mass; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); USES (Uses)
 (cathode active mass; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6,
 Dimethyl carbonate 872-36-6, Vinylene carbonate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9
 90076-65-6 132843-44-8 176719-70-3 189217-56-9

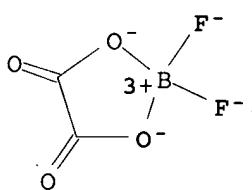
RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 409071-16-5 521065-36-1 866596-75-0
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses
 RL: DEV (Device component use); USES (Uses)
 (oxides containing, anode active mass; nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

IT 409071-16-5
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytic solns. containing carbonate esters, Li salts, and ionic metal complexes for secondary Li batteries)

RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-)̑O1,̑O2]difluoro-, lithium, (T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:98399 HCAPLUS
 DN 142:201568
 TI Secondary lithium battery
 IN Ito, Yuichi; Takeuchi, Yoji; Hiruta, Osamu; Okuda, Takuaki; Kawauchi,

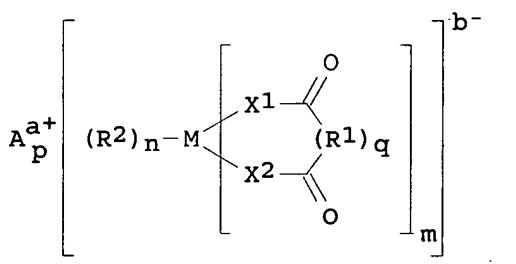
PA Shigehiro; Nakano, Hideyuki; Sasaki, Iwao; Ukyo, Yoshio; Tsujioka, Shoichi
 Toyota Central Research and Development Laboratories Inc., Japan; Central
 Glass Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 24 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005032712	A2	20050203	JP 2004-178176	20040616
PRAI	JP 2003-171229	A	20030616		
GI					



AB The battery has a cathode, comprising a Li containing oxide active mass, an anode, containing a carbonaceous material active mass, and a nonaqueous electrolyte solution having an electrolyte salt dissolved in an organic solvent; where the electrolyte solution is added with a compound I [M = transition metal or group III-V element; Aa+ = metal ion, H+, or onium ion; a = 1-3; b = 1-3; p = b/a; m = 1-4; n = 1-8; q = 0 or 1; R1 = C1-10 (halogenated) alkylene or C6-20 (halogenated) arylene, and some may have substituent and/or hetero atom in their structure or may be bonded to each other; R2 = halo, C1-10 (halogenated) alkyl, C6-20 (halogenated) aryl, or X3R3, and some may have substituent and/or hetero atom in its structure, or may be bonded to each other to form a ring; X1, X2, X3 = O, S, or NR4; R3, R4 = H, C1-10 (halogenated) alkyl, C6-20 (halogenated) aryl, and some may have substituent and/or hetero atom in its structure or may be bonded to each other to form a ring]; and the cathode active mass contains a layered rock salt structured Li Ni composite oxide as main component.

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte additive solvent decompr
suppression; battery cathode lithium nickel composite oxide

IT Battery cathodes

Battery electrolytes

(electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT Secondary batteries

(lithium; electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

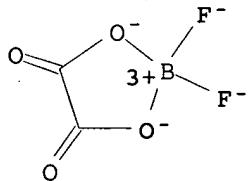
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3,
 Lithium hexafluorophosphate 145896-60-2, Aluminum lithium manganese
 oxide (Al_{0.2}LiMn_{1.8}O₄) 193214-24-3, Aluminum cobalt lithium nickel oxide
 (Al_{0.05}Co_{0.15}LiNi_{0.8}O₂)
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing solvent decomposition inhibitive compds. and cathodes
 containing lithium nickel composite oxides for secondary lithium batteries)

IT 409071-16-5 678966-16-0
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing solvent decomposition inhibitive compds. and cathodes
 containing lithium nickel composite oxides for secondary lithium batteries)

IT 409071-16-5
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing solvent decomposition inhibitive compds. and cathodes
 containing lithium nickel composite oxides for secondary lithium batteries)

RN 409071-16-5 HCAPLUS

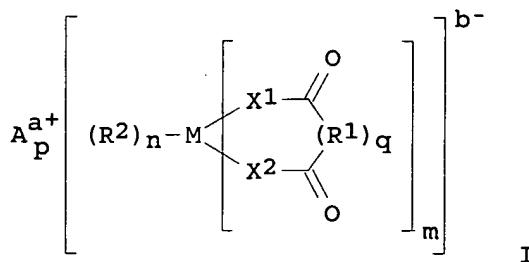
CN Borate(1-), [ethanedioato(2-) -κO₁,κO₂]difluoro-, lithium,
 (T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 6 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:94157 HCAPLUS
 DN 142:201563
 TI Secondary lithium battery and its manufacture
 IN Sasaki, Iwao; Ito, Yuichi; Hiruta, Osamu; Okuda, Takuaki; Kawauchi,
 Shigehiro; Nakano, Hideyuki; Takeuchi, Yoji; Ukyo, Yoshio; Tsujioka,
 Shoichi
 PA Toyota Central Research and Development Laboratories Inc., Japan; Central
 Glass Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 26 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005032715	A2	20050203	JP 2004-178179	20040616
PRAI JP 2003-171232	A	20030616		
GI				



AB The battery has a cathode, comprising a Li containing oxide active mass, an anode, containing a carbonaceous material active mass, and a nonaq. electrolyte solution having an electrolyte salt dissolved in an organic solvent; where the electrolyte solution is added with a compound I [M = transition metal or group III-V element; Aa+ = metal ion, H+, or onium ion; a = 1-3; b = 1-3; p = b/a; m = 1-4; n = 1-8; q = 0 or 1; R1 = C1-10 (halogenated) alkylene or C6-20 (halogenated) arylene, and some may have substituent and/or hetero atom in their structure or may be bonded to each other; R2 = halo, C1-10 (halogenated) alkyl, C6-20 (halogenated) aryl, or X3R3, and some may have substituent and/or hetero atom in its structure, or may be bonded to each other to form a ring; X1, X2, X3 = O, S, or NR4; R3, R4 = H, C1-10 (halogenated) alkyl, C6-20 (halogenated) aryl, and some may have substituent and/or hetero atom in its structure or may be bonded to each other to form a ring]; and in the anode, the whole or a part of the compound I is decomposed by charging the battery ≥ 1 cycle to form a coating on the anode or its active mass surface.

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte additive solvent decompn suppression; battery cathode lithium nickel composite oxide

IT Battery cathodes

Battery electrolytes

(electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT Carbon fibers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(graphitized; mesophase pitch; electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT Secondary batteries

(lithium; electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 12031-95-7,

Lithium titanium oxide (Li4Ti5O12) 21324-40-3, Lithium

hexafluorophosphate 193214-24-3, Aluminum cobalt lithium nickel oxide (Al0.05Co0.15LiNi0.802)

RL: DEV (Device component use); USES (Uses)

(electrolytes containing solvent decomposition inhibitive compds. and cathodes containing lithium nickel composite oxides for secondary lithium batteries)

IT 7440-44-0D, Carbon, graphitized; mesophase microbeads 409071-16-5

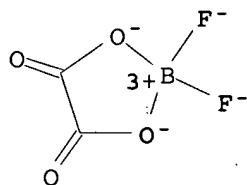
678966-16-0

RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing solvent decomposition inhibitive compds. and cathodes
 containing lithium nickel composite oxides for secondary lithium batteries)

IT 409071-16-5

RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing solvent decomposition inhibitive compds. and cathodes
 containing lithium nickel composite oxides for secondary lithium batteries)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-)̑O1,̑O2]difluoro-, lithium,
 (T-4)- (9CI) (CA INDEX NAME)● Li⁺

L3 ANSWER 7 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:78059 HCAPLUS

DN 142:159580

TI Long life lithium batteries with stabilized electrodes

IN Amine, Khalil; Kim, Jaekook; Vissers, Donald R.

PA USA

SO U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
PI US 2005019670	A1	20050127	US 2004-857365	20040528
PRAI US 2003-488063P	P	20030717		

AB The present invention relates to nonaq. electrolytes having stabilization additives and electrochem. devices containing the same. Thus the present invention provides electrolytes containing an alkali metal salt, a polar aprotic solvent, a first additive that is a substituted or unsubstituted organoamine, substituted or unsubstituted alkane, substituted or unsubstituted alkene, or substituted or unsubstituted aryl compound, and/or a second additive that is a metal(chelato)borate. When used in electrochem. devices with, e.g., lithium manganese oxide spinel electrodes, the new electrolytes provide batteries with improved calendar and cycle life.

IC ICM H01M010-40

ICS H01M004-58; H01M004-52; H01M004-60; H01M004-50

INCL 429326000; 429213000; 429224000; 429231100; 429223000; 429231300;
 429221000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery stabilized electrode

IT Secondary batteries

(lithium; long life lithium batteries with stabilized electrodes)

IT Battery electrodes
 Battery electrolytes
 (long life lithium batteries with stabilized electrodes)

IT Intermetallic compounds
 RL: DEV (Device component use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT Alkanes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT Alkenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT Aromatic compounds
 RL: MOA (Modifier or additive use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT Chelates
 RL: MOA (Modifier or additive use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT Amines, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (organic; long life lithium batteries with stabilized electrodes)

IT Tin alloy, base
 RL: DEV (Device component use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

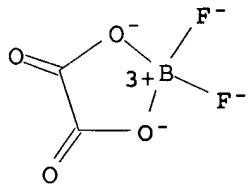
IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
 Diethyl carbonate 108-32-7, Propylene carbonate 115-10-6, Dimethyl
 ether 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7664-38-2D,
 Phosphoric acid, alkyl fluoro compound, lithium salt 7782-42-5, Graphite,
 uses 7791-03-9, Lithium perchlorate 11099-11-9, Vanadium oxide
 12022-46-7, Iron lithium oxide (FeLiO₂) 12031-65-1, Lithium nickel oxide
 (LiNiO₂) 12031-95-7, Lithium titanium oxide (Li₄Ti₅O₁₂) 12057-17-9,
 Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide
 (CoLiO₂) 14283-07-9, Lithium tetrafluoroborate 15365-14-7, Iron
 lithium phosphate felipo₄ 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate
 90076-65-6 128975-24-6, Lithium manganese nickel oxide limn0.5ni0.5o₂
 132404-42-3 132843-44-8 609349-41-9, Cobalt lithium manganese nickel
 oxide (Co0.3LiMn0.3Ni0.3O₂)
 RL: DEV (Device component use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT 84-15-1, o-Terphenyl 91-19-0, Quinoxaline 91-20-3, Naphthalene, uses
 91-22-5, Quinoline, uses 92-52-4, Biphenyl, uses 96-54-8,
 n-Methylpyrrole 100-43-6, 4-Vinylpyridine 100-69-6, 2-Vinylpyridine
 101-84-8, Diphenyl ether 102-71-6, Triethanolamine, uses 103-29-7,
 1,2-Diphenylethane 106-99-0, Butadiene, uses 110-86-1, Pyridine, uses
 110-89-4, Piperidine, uses 119-65-3, Isoquinoline 120-72-9, Indole,
 uses 288-32-4, Imidazole, uses 289-80-5, Pyridazine 289-95-2,
 Pyrimidine 290-37-9, Pyrazine 1118-58-7, 1,3-Dimethyl 1,3-butadiene
 1337-81-1, Vinyl Pyridine 4177-16-6, Pyrazine, vinyl- 4427-96-7, Vinyl
 ethylene carbonate 7570-02-7, Divinyl carbonate 29383-23-1, Vinyl
 Imidazole 30676-86-9, Piperidine, vinyl- 30851-79-7 31094-36-7
 51222-11-8 66281-01-4 66281-16-1 77208-21-0 244761-29-3, Lithium
 bis(oxalato)borate 409071-16-5
 RL: MOA (Modifier or additive use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

IT 409071-16-5
 RL: MOA (Modifier or additive use); USES (Uses)
 (long life lithium batteries with stabilized electrodes)

RN 409071-16-5 HCPLUS

CN Borate(1-), [ethanedioato(2-)̑O1,̑O2]difluoro-, lithium,
(T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 8 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2005:34089 HCAPLUS

DN 142:117670

TI Secondary lithium battery

IN Minami, Hiroyuki; Yagi, Hiromasa; Sayama, Katsunobu; Tarui, Hisaki;
Fujitani, Shin

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

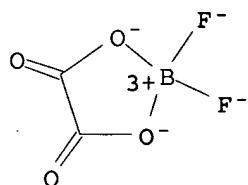
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005011725	A2	20050113	JP 2003-175728	20030620
PRAI	JP 2003-175728		20030620		
AB The battery has a cathode, an anode, and a nonaq. electrolyte solution; where the cathode and/or the anode has a Li alloyable active mass, capable of intercalating Li, on a collector; the active mass layer is cut in its thickness direction forming separated active mass columns, with the bottom of the columns in compact contact with the collector; and the electrolyte solution has a F containing lithium borate derivative as an electrolyte salt.					
IC ICM H01M010-40					
ICS H01M004-02; H01M004-04; H01M004-38; H01M004-66					
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)					
ST secondary lithium battery electrode active mass column structure; battery electrolyte salt F contg lithium borate deriv					
IT Battery anodes					
Battery electrodes (anodes with active mass layers containing separated columns perpendicular to collectors for secondary lithium batteries)					
IT	7440-21-3, Silicon, uses 7440-50-8, Copper, uses				
	RL: DEV (Device component use); USES (Uses)				
	(anodes with active mass layers containing separated columns perpendicular to collectors for secondary lithium batteries)				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate 409071-16-5				
	RL: DEV (Device component use); USES (Uses)				
	(electrolyte salts having F containing lithium borate derivs. for secondary lithium batteries)				
IT	409071-16-5				
	RL: DEV (Device component use); USES (Uses)				

(electrolyte salts having F containing lithium borate derivs. for secondary lithium batteries)

RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-) -κO₁,κO₂]difluoro-, lithium,
 (T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:13862 HCAPLUS

DN 142:97486

TI Electrolyte and secondary battery which uses the electrolyte

IN Naruse, Yoshiaki; Akashi, Hiroyuki; Fujita, Shigeru

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005005118	A2	20050106	JP 2003-166864	20030611

PRAI JP 2003-166864 20030611
 AB The battery has a cathode, an anode, and an electrolyte solution; where the anode capacity is a sum of a capacity component by intercalation and decalation of a light metal and a capacity component by deposition and dissoln. of light metal; and the electrolyte contains a 1st light metal salt, having B-X1 bond (B = boron ; and X = O or S), and a 2nd light metal salt, having P-X2 bond (P = phosphorus; and X2 = O or S).

IC ICM H01M010-40
 ICS H01M004-02; H01M004-58; H01M010-36; C07F005-04; C07F009-6574
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrolyte light metal salt; secondary lithium battery light metal intercalating depositing anode

IT Secondary batteries
 (lithium; secondary lithium batteries using lithium intercalating and depositing anodes and electrolyte solns. containing lithium salt)

IT Battery electrolytes
 (secondary lithium batteries using lithium intercalating and depositing anodes and electrolyte solns. containing lithium salt)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO₂) 13478-14-3, Lithium arsenate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6 132404-42-3 409071-16-5 521065-36-1 678966-16-0

RL: DEV (Device component use); USES (Uses)
 (secondary lithium batteries using lithium intercalating and depositing

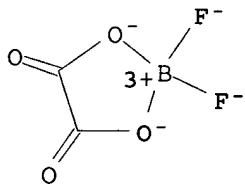
anodes and electrolyte solns. containing lithium salt)

IT 409071-16-5

RL: DEV (Device component use); USES (Uses)
 (secondary lithium batteries using lithium intercalating and depositing
 anodes and electrolyte solns. containing lithium salt)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-)̑O1,̑O2]difluoro-, lithium,
 (T-4)- (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 10 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:13861 HCAPLUS

DN 142:97485

TI Electrolyte and secondary battery which uses the electrolyte

IN Aoki, Masahiro; Fujita, Shigeru; Adachi, Momoe; Akashi, Hiroyuki; Naruse, Yoshiaki

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

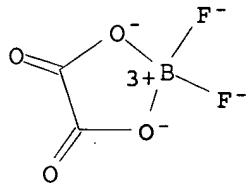
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005005116	A2	20050106	JP 2003-166862	20030611
PRAI	JP 2003-166862		20030611		
AB The battery has a cathode, an anode, and an electrolyte in a film-shaped outer packaging member; where the electrolyte contains a light metal salt, having M-X bond (M = transition metal, Group B element, Group 4B element, or Group 5B element; and X = O or S).					
IC	ICM H01M010-40				
	ICS H01M004-02; H01M004-58				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrolyte light metal salt				
IT	Battery electrolytes (electrolytes containing light metal salts for secondary lithium batteries)				
IT	Secondary batteries (lithium; electrolytes containing light metal salts for secondary lithium batteries)				
IT	96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO ₂) 13478-14-3, Lithium arsenate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6 132404-42-3 409071-16-5 521065-36-1				
	RL: DEV (Device component use); USES (Uses) (electrolytes containing light metal salts for secondary lithium batteries)				

IT 409071-16-5

RL: DEV (Device component use); USES (Uses)
 (electrolytes containing light metal salts for secondary lithium batteries)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-)- κ O1, κ O2]difluoro-, lithium,
 (T-4)- (9CI) (CA INDEX NAME)

● Li⁺

L3 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:13860 HCAPLUS

DN 142:97484

TI Electrolyte and secondary battery which uses the electrolyte

IN Aoki, Masahiro; Fujita, Shigeru; Adachi, Momoe; Akashi, Hiroyuki; Naruse, Yoshiaki

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DT Patent

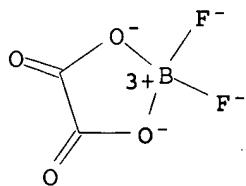
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005005115	A2	20050106	JP 2003-166860	20030611
PRAI	JP 2003-166860		20030611		
AB The electrolyte contains a light metal salt, having M-X bond (M = transition metal, Group B element, Group 4B element, or Group 5B element; and X = O or S), and an unsatd. carbonate ester compound. The battery has a cathode, an anode, and the above electrolyte.					
IC ICM H01M010-40 ICS H01M004-02; H01M004-58					
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)					
ST secondary battery electrolyte light metal salt unsatd carbonate compd					
IT Battery electrolytes (electrolytes containing light metal salts and unsatd. carbonate compds. for secondary batteries)					
IT Secondary batteries (lithium; electrolytes containing light metal salts and unsatd. carbonate compds. for secondary batteries)					
IT 90076-65-6 132404-42-3 RL: DEV (Device component use); USES (Uses) (electrolytes containing light metal salts and unsatd. carbonate compds. for secondary batteries)					
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO ₂) 13478-14-3, Lithium arsenate 14283-07-9,					

Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
409071-16-5 521065-36-1
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing light metal salts and unsatd. carbonate compds.
 for secondary lithium batteries)

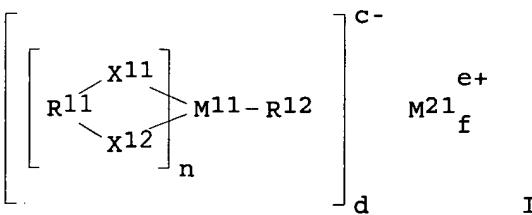
IT **409071-16-5**
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing light metal salts and unsatd. carbonate compds.
 for secondary lithium batteries)
 RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-) - κ O1, κ O2]difluoro-, lithium,
 (T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:9689 HCAPLUS
 DN 142:59811
 TI Battery electrolytes containing light metal salts and lithium salts and batteries
 IN Adachi, Momoe; Akashi, Hiroyuki; Naruse, Yoshiaki; Aoki, Masahiro; Fujita, Shigeru; Tsujioka, Shoichi; Isono, Yoshimi
 PA Sony Corp., Japan; Central Glass Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 22 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005005114	A2	20050106	JP 2003-166859	20030611
PRAI JP 2003-166859		20030611		
OS MARPAT 142:59811				
GI				



AB The electrolytes contain (A) light metal salt I ($R_{11} = COR_{21}CO$, $(CO)_2$; $R_{21} = (\text{halo})\text{alkylene}$, $(\text{halo})\text{arylene}$; $R_{12} = \text{halogen}$, $(\text{halo})\text{alkyl}$, $(\text{halo})\text{aryl}$; $X_{11}, X_{12} = O, S$; $M_{11} = \text{transition metals, Group 3B, 4B, 5B element}$; $M_{21} = \text{Group 1A, 2A element, Al}$; $a = \text{integer of } 1-4$; $b = \text{integer of } 0-8$; $c, d, e, f = \text{integer of } 1-3$), (B) LiPF_6 , and (C) other Li salts, e.g. LiBF_4 , LiClO_4 , LiAsF_6 , $\text{LiN(CmF2m+1SO}_2)$ ($m, n = \text{integer of } \geq 1$), $\text{LiC(CpF2p+1SO}_2)$ ($p, q, r = \text{integer of } \geq 1$). Batteries comprising the said electrolytes are also claimed. Batteries with high capacity, excellent cycle characteristics, and storage stability are obtained.

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrolyte lithium fluorophosphate; fluoroxyolatoborate lithium

IT battery electrolyte; fluoroxyolatophosphate lithium battery electrolyte

IT Battery electrolytes

(light metal salts, lithium perfluorophosphate, and other Li salts as electrolytes in Li batteries)

IT Secondary batteries

(lithium; light metal salts, lithium perfluorophosphate, and other Li salts as electrolytes in Li batteries)

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate

21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium

hexafluoroarsenate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imid

e 132404-42-3, Lithium tris(trifluoromethylsulfonyl)methanide

132843-44-8, Lithium bis(pentafluoroethanesulfonyl)amide

409071-16-5 521065-36-1

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

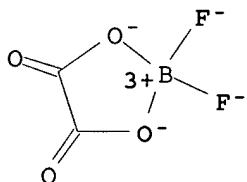
(light metal salts, lithium perfluorophosphate, and other Li salts as electrolytes in Li batteries)

IT 409071-16-5

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(light metal salts, lithium perfluorophosphate, and other Li salts as electrolytes in Li batteries)

RN 409071-16-5 HCPLUS

CN Borate(1-), [ethanedioato(2-) - $\kappa O_1, \kappa O_2$]difluoro-, lithium, (T-4)- (9CI) (CA INDEX NAME)● Li^+

L3 ANSWER 13 OF 21 HCPLUS COPYRIGHT 2005 ACS on STN

AN 2004:1079822 HCPLUS

DN 142:41543

TI Secondary battery

IN Adachi, Momoe; Fujita, Shigeru; Aoki, Masahiro; Akashi, Hiroyuki; Naruse,

Yoshiaki

PA Sony Corporation, Japan
 SO Eur. Pat. Appl., 26 pp.
 CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1487048	A2	20041215	EP 2004-13601	20040609
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	JP 2005005117	A2	20050106	JP 2003-166863	20030611
	US 2004259000	A1	20041223	US 2004-865198	20040609
PRAI	JP 2003-166863	A	20030611		

OS MARPAT 142:41543

AB Provided is a battery capable of improving battery characteristics such as cycle characteristics. The battery comprises a spirally wound electrode body including a cathode and an anode spirally wound with a separator in between. The capacity of the anode includes a capacity component by insertion and extraction of light metal and a capacity component by precipitation and dissoln. of the light metal, and is represented by the sum of them. The separator is impregnated with an electrolyte solution formed through dissolving a lithium salt in a solvent. As the electrolyte salt, difluoro[oxalato-O,O']lithium borate, tetrafluoro[oxalato-O,O']lithium phosphate or difluorobis[oxalato-O,O']lithium phosphate is used. By the formation of a stable coating, decomposition of the solvent and a reaction between precipitated lithium metal and the solvent can be prevented.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery secondary

IT Secondary batteries

(lithium; secondary battery)

IT Battery electrolytes
(secondary battery)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 872-36-6,
 Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 7782-42-5,
 Graphite, uses 7791-03-9, Lithium perchlorate 9003-07-0, Polypropylene
 11113-67-0, Iron lithium oxide 14283-07-9, Lithium tetrafluoroborate
 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate 39300-70-4, Lithium nickel oxide 39457-42-6,
 Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 90076-65-6
 132404-42-3 409071-16-5 521065-36-1 678966-16-0

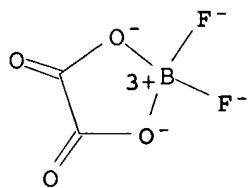
RL: DEV (Device component use); USES (Uses)
(secondary battery)IT 12190-79-3P, Cobalt lithium oxide (CoLiO₂)RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(secondary battery)

IT 409071-16-5

RL: DEV (Device component use); USES (Uses)
(secondary battery)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-) -κO₁, κO₂]difluoro-, lithium,
(T-4) - (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:1079821 HCAPLUS
 DN 142:41542
 TI Secondary battery
 IN Adachi, Momoe; Fujita, Shigeru; Aoki, Masahiro; Akashi, Hiroyuki; Naruse, Yoshiaki
 PA Sony Corporation, Japan
 SO Eur. Pat. Appl., 31 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1487047	A2	20041215	EP 2004-13471	20040608
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	JP 2005026203	A2	20050127	JP 2003-414622	20031212
	US 2005095503	A1	20050505	US 2004-866214	20040610

PRAI JP 2003-166861 A 20030611
 JP 2003-414622 A 20031212

AB The invention provides a battery, which has a high capacity and can improve battery characteristics such as cycle characteristics. The battery comprises a spirally wound electrode body, wherein a cathode and an anode are wound with a separator in between. The anode includes at least one from the group consisting of simple substances, alloys, and compds. of metal elements or metalloid elements capable of forming an alloy with Li. An electrolytic solution wherein an electrolyte salt is dissolved in a solvent is impregnated in the separator. For the electrolyte salt, a light metallic salt having B-O bond or P-O bond such as difluoro [oxalato-O, O'] lithium borate and tetra fluoro [oxalato-O, O'] lithium phosphate is used. By forming a stable coating, decomposition reaction of the solvent can be inhibited, and reaction between the anode and the solvent can be prevented.

IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery secondary

IT Semimetals

RL: DEV (Device component use); USES (Uses)
 (compds.; secondary battery)

IT Secondary batteries
 (lithium; secondary battery)

IT Coating process
 (plating; secondary battery)

IT Coating process

(secondary battery)

IT Alloys, uses
RL: DEV (Device component use); USES (Uses)
(secondary battery)

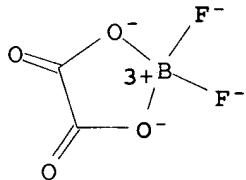
IT Carbonaceous materials (technological products)
RL: MOA (Modifier or additive use); USES (Uses)
(secondary battery)

IT 7440-21-3, Silicon, uses 7440-21-3D, Silicon, compound 7440-31-5, Tin,
uses 7440-31-5D, Tin, compound 7791-03-9, Lithium perchlorate
12190-79-3, Cobalt lithium oxide (CoLiO₂) 12645-62-4 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate 71818-44-5 90076-65-6
132404-42-3 156762-86-6 220289-38-3 244761-29-3 321201-33-6
409071-16-5 521065-36-1 678966-16-0
RL: DEV (Device component use); USES (Uses)
(secondary battery)

IT **409071-16-5**
RL: DEV (Device component use); USES (Uses)
(secondary battery)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-)̑O₁,̑O₂]difluoro-, lithium,
(T-4)- (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:412142 HCAPLUS
 DN 140:409635
 TI Electrolyte containing lithium complex for electrochemical device,
electrolyte solution, a solid electrolyte, and batteries
 IN Tsujioka, Shoichi; Takase, Hiroshige
 PA Central Glass Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 14 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
PI JP 2004146071	A2	20040520	JP 2002-306078	20021021
PRAI JP 2002-306078		20021021		
OS MARPAT 140:409635				
GI				

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The electrolyte contains at least I or II (M = metal; Aa+ = metal ion such as Li+, hydrogen ion, onium ion; a = 1-3; b = 1-3; p = b/a; m = 1-4; n = 0-8; q = 0, 1; R1,2 = H, halo, C1-10 alkyl, etc.; R3 = C1-10 alkylene, etc.; R4 = halo, C1-10 alkyl, etc.; R5,6 = H, C1-10 alkyl; and X3 = O, S, etc.).

IC ICM H01B001-06
ICS H01G009-038; H01M006-16; H01M006-18; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 29, 72

ST electrolyte electrochem device lithium complex secondary battery

IT Electric apparatus
(electrochem.; electrolyte containing lithium borate derivative and lithium phosphate derivative for electrochem. device and lithium secondary battery)

IT Electrolytes
Solid electrolytes
(electrolyte containing lithium borate derivative and lithium phosphate derivative for electrochem. device and lithium secondary battery)

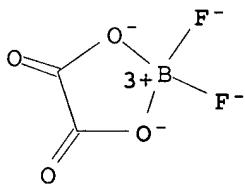
IT Secondary batteries
(lithium; electrolyte containing lithium borate derivative and lithium phosphate derivative for electrochem. device and lithium secondary battery)

IT 321936-22-5 409071-16-5 678966-16-0 688310-44-3
RL: DEV (Device component use); USES (Uses)
(electrolyte containing lithium borate derivative and lithium phosphate derivative for electrochem. device and lithium secondary battery)

IT 409071-16-5
RL: DEV (Device component use); USES (Uses)
(electrolyte containing lithium borate derivative and lithium phosphate derivative for electrochem. device and lithium secondary battery)

RN 409071-16-5 HCPLUS

CN Borate(1-), [ethanedioato(2-)–κO₁,κO₂]difluoro-, lithium,
(T-4)- (9CI) (CA INDEX NAME)

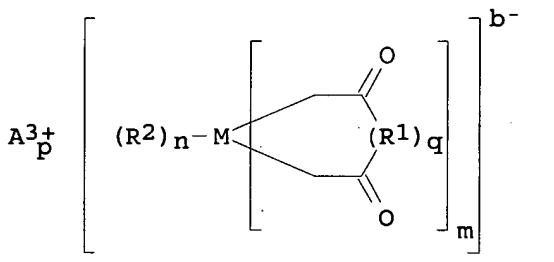


● Li⁺

L3 ANSWER 16 OF 21 HCPLUS COPYRIGHT 2005 ACS on STN
AN 2004:291769 HCPLUS
DN 140:324183
TI Solvent decomposition control method for electrochemical device and the device which uses the method
IN Tsujioka, Shoichi; Takase, Hiroshige
PA Central Glass Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004111349	A2	20040408	JP 2003-95689	20030331
PRAI JP 2002-213227	A	20020723		
OS MARPAT 140:324183				
GI				



AB The method, for electrochem. device which comprises an anode, a cathode, a separator, and a nonaq. electrolyte solution or a gel electrolyte having a solvent decomposed at ≤ 2 V (vs. Li/Li $+$), is carried out by adding a compound I [M = transition metal or group III-V element; Aa $+$ = metal ion, H $+$, or onium ion; a, b = 1-3; p = b/a; m = 1-4; n = 0-8; q = 0 or 1; R1 = C1-10 (halogenated) alkylene or C4-20 (halogenated) arylene, and some may have substituent and/or hetero atom in their structure or may be bonded to each other; R2 = halo, C1-10 (halogenated) alkyl, C4-20 (halogenated) aryl, or X3R3, and some may have substituent and/or hetero atom in its structure, or may be bonded to each other to form a ring; x1, X2, x3 = O, S, or NR4; R3, R4 = H, C1-10 (halogenated) alkyl, C4-20 (halogenated) aryl, and some may have substituent and/or hetero atom in its structure or may be bonded to each other to form a ring] into the nonaq. electrolyte solution or the gel electrolyte. The device, especially a secondary lithium battery, uses a nonaq. electrolyte solution treated by the above method.

IC ICM H01M010-40

ICS H01G009-038; H01M004-02; H01M004-06; H01M004-40; H01M004-58;
H01M006-16; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte additive solvent decompn suppression

IT Battery electrolytes

(electrolytes containing solvent decomposition inhibitive compds. for secondary lithium batteries)

IT Secondary batteries

(lithium; electrolytes containing solvent decomposition inhibitive compds. for secondary lithium batteries)

IT 75-05-8, Acetonitrile, uses 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 512-56-1, Trimethyl phosphate 616-42-2, Dimethyl sulfite 623-53-0, Ethyl methyl carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO₂) 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

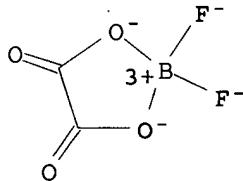
(electrolytes containing solvent decomposition inhibitive compds. for secondary lithium batteries)

IT 244761-29-3 409071-16-5 678966-16-0

RL: MOA (Modifier or additive use); USES (Uses)

(electrolytes containing solvent decomposition inhibitive compds. for secondary lithium batteries)

IT 409071-16-5
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing solvent decomposition inhibitive compds. for secondary lithium batteries)
 RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-) - κ O1, κ O2]difluoro-, lithium,
 (T-4)- (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:272124 HCAPLUS

DN 140:306722

TI Nonaqueous electrolyte solution for the electrochemical device and the device using the solution

IN Tsujioka, Shoichi; Takase, Hiroshige

PA Central Glass Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004103372	A2	20040402	JP 2002-263142	20020909
PRAI JP 2002-263142		20020909		

OS MARPAT 140:306722

AB The nonaq. electrolyte solution has an electrolyte salt dissolved in a solvent mixture; where the solution contains an aromatic compound having C=C double bond in \geq 1 substituent. The device, especially a secondary lithium battery or a double layer capacitor, has a cathode, an anode, and an electrolyte solution or a gel electrolyte; where the electrolyte solution or the gel electrolyte uses the above nonaq. solution

IC ICM H01M010-40

ICS H01G009-038; H01M006-16; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery capacitor arom compd

IT Capacitors

(double layer; electrolyte solns. containing aromatic compds. for secondary lithium batteries and double-layer capacitors)

IT Battery electrolytes

(electrolyte solns. containing aromatic compds. for secondary lithium batteries and double-layer capacitors)

IT Secondary batteries

(lithium; electrolyte solns. containing aromatic compds. for secondary lithium batteries and double-layer capacitors)

IT 96-49-1, Ethylene carbonate 100-42-5, uses 350-51-6 616-38-6,

Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 409071-16-5

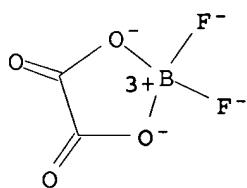
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing aromatic compds. for secondary lithium batteries and double-layer capacitors)

IT 409071-16-5

RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing aromatic compds. for secondary lithium batteries and double-layer capacitors)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-) - κ O1, κ O2]difluoro-, lithium,
(T-4)- (9CI) (CA INDEX NAME)

● Li⁺

L3 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:178268 HCAPLUS

DN 140:220686

TI Secondary nonaqueous electrolyte battery

IN Tsujioka, Shoichi; Takase, Hiroshige; Fukuhara, Tomohito; Seyama, Yukitaka; Wada, Hiroshi

PA Central Glass Co., Ltd., Japan; Japan Storage Battery Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004071159	A2	20040304	JP 2002-224318	20020801
PRAI JP 2002-224318		20020801		

AB The battery uses a spinel type Li Mn oxide cathode active mass and an electrolyte solution containing Li⁺[(C₂O₄)BF₂]⁻ as electrolyte. The cathode active mass is preferably Li_{1+x}Mn_{2-x-y}My_yO₄, where M = Ti, Cr, Fe, Co, Ni, Zn, Al, and/or Mg; 0.05 ≤ x ≤ 0.154, and 0.02 ≤ y ≤ 0.15.

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery lithium manganese oxide cathode compon; lithium fluoroethanedioatoborate electrolyte secondary lithium battery

IT Battery cathodes

(cathodes for secondary lithium batteries with lithium difluoroethanedioatoborate containing electrolyte solns.)

IT Battery electrolytes

(electrolyte solns. containing lithium difluoroethanedioatoborate for

secondary lithium batteries)

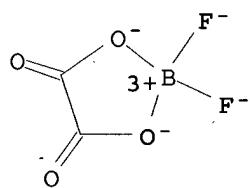
IT 12057-17-9D, Lithium manganese oxide (LiMn₂O₄), transition metal substituted
 RL: DEV (Device component use); USES (Uses)
 (cathodes for secondary lithium batteries with lithium difluoroethanedioatoborate containing electrolyte solns.)

IT 21324-40-3, Lithium hexafluorophosphate 409071-16-5
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing lithium difluoroethanedioatoborate for secondary lithium batteries)

IT 409071-16-5
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing lithium difluoroethanedioatoborate for secondary lithium batteries)

RN 409071-16-5 HCAPLUS

CN Borate(1-), [ethanedioato(2-)· κ O₁, κ O₂]difluoro-, lithium, (T-4)- (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 19 OF 21 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2003:910400 HCAPLUS
 DN 139:397951
 TI Corrosion control method and electric battery for electrochemistry device
 IN Tsujioka, Shoichi; Takase, Hiroshige; Takahashi, Motohiro; Isono, Yoshimi
 PA Central Glass Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003331917	A2	20031121	JP 2002-137467	20020513
PRAI JP 2002-137467		20020513		

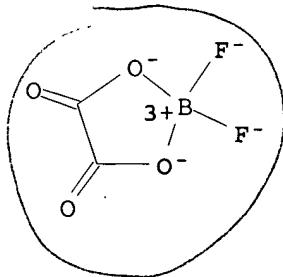
AB The title corrosion control method and battery are used for electrochem. devices using nonaq. electrolyte solution elec. double layer capacitor, Li battery, and Li ion cell. The battery comprises a pos. electrode, a neg. electrode, and electrolyte solution or gel electrolyte. The electrolyte solution is made by dissolving LiPF₆ in a mix. solvent containing ethylene carbonate and di-Me carbonate (or ethylmethyl carbonate) and a lithium borate (or lithium phosphate) induction agent. The outfit of the battery is coated with an aluminum laminating film.

IC ICM H01M010-40

ICS H01G009-155; H01M002-02

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 72

ST corrosion control elec battery electrochem device
 IT Corrosion
 Primary batteries
 (corrosion control method and elec. battery for electrochem. device
 using nonaq. electrolyte solution)
 IT Fluoropolymers, uses
 RL: DEV (Device component use); USES (Uses)
 (corrosion control method and elec. battery for electrochem. device
 using nonaq. electrolyte solution)
 IT Electric apparatus
 (electrochem.; corrosion control method and elec. battery for
 electrochem. device using nonaq. electrolyte solution)
 IT Gels
 (electrolyte; corrosion control method and elec. battery for
 electrochem. device using nonaq. electrolyte solution)
 IT Capacitors
 (nonaq. electrolyte solution elec. double layer; corrosion control method
 and elec. battery for electrochem. device using nonaq. electrolyte
 solution)
 IT 7439-93-2, Lithium, uses
 RL: DEV (Device component use); USES (Uses)
 (battery; corrosion control method and elec. battery for electrochem.
 device using nonaq. electrolyte solution)
 IT 68-12-2, N,N-Dimethylformamide, uses 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0,
 Ethylmethyl carbonate 7429-90-5, Aluminum, uses 7440-50-8, Copper,
 uses 9002-88-4, Polyethylene 12190-79-3, Cobalt lithium oxide CoLiO₂
 21324-40-3 24937-79-9, PVDF
 RL: DEV (Device component use); USES (Uses)
 (corrosion control method and elec. battery for electrochem. device
 using nonaq. electrolyte solution)
 IT 409071-16-5 521065-36-1
 RL: DEV (Device component use); USES (Uses)
 (induction agent; corrosion control method and elec. battery for
 electrochem. device using nonaq. electrolyte solution)
 IT 409071-16-5
 RL: DEV (Device component use); USES (Uses)
 (induction agent; corrosion control method and elec. battery for
 electrochem. device using nonaq. electrolyte solution)
 RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-)]₂[O₁,O₂]difluoro-, lithium,
 (T-4)- (9CI) (CA INDEX NAME)



● Li⁺

DN 138:354100

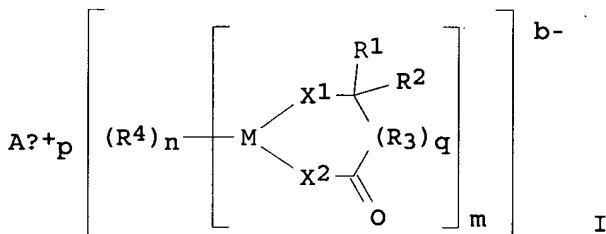
TI Preparation of lithium (alkanoato)borates and (alkanoato)phosphates
 IN Tsujioka, Shoichi; Takase, Hironari; Takahashi, Mikihiro; Isono, Yoshimi
 PA Central Glass Co., Ltd., Japan
 SO Eur. Pat. Appl., 13 pp.
 CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1308449	A2	20030507	EP 2002-24608	20021104
	EP 1308449	A3	20030924		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	JP 2003137890	A2	20030514	JP 2001-339630	20011105
	JP 2003212879	A2	20030730	JP 2002-9342	20020118
	US 2003100761	A1	20030529	US 2002-285680	20021101
	US 6849752	B2	20050201		
PRAI	JP 2001-339630	A	20011105		
	JP 2002-9342	A	20020118		
OS	CASREACT 138:354100; MARPAT 138:354100				
GI					



AB Ionic metal complexes [I; wherein M = an element of groups 3-15 of the periodic table; Aa+ = metal ion, onium ion or proton; X1, X2, independently = O, S or NR5R6; R1, R2, independently = H, halogen, (C1-C10)alkyl, (C1-C10)halogenated alkyl; R3 = (C1-C10)alkylene, (C1-C10)halogenated alkylene, (C4-C20)aryl, (C4-C20)halogenated aryl, or together form (:O); R4 = halogen, (C1-C10)alkyl group, (C1-C10)halogenated alkyl, (C4-C20)aryl, (C4-C20)halogenated aryl, X2R7; R5, R6, independently = H, (C1-C10)alkyl; and R7 = (C1-C10)alkyl, (C1-C10)halogenated alkyl, (C4-C20)aryl, (C4-C20)halogenated aryl; a = 1, 2, 3; b = 1, 2, 3; p = b/a; m = 1, 2, 3, 4; n = 0, 1, 2, 3, 4, 5, 6, 7, 8; q = 0, 1] were prepared. For example, Li[B{OC(CF3)2CO2}2] was prepared from HO(CF3)2COOH and LiBF4 in acetonitrile. It is possible by this process to easily and efficiently synthesize the ionic metal complex, which can be used as a supporting electrolyte for electrochem. devices, a polymerization catalyst of polyolefins and so forth, or a catalyst for organic synthesis.

IC ICM C07F005-02

ICS C07F009-6571

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 78

ST lithium boron hydroxyisobutyrate prep; borate lithium oxalate prep; ionic metal carboxylate complex prep; phosphate lithium oxalate prep

IT Carboxylic acids, preparation

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP

(Preparation)
 (complexes; preparation of ionic metal complexes)

IT Carboxylic acids, preparation
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
 (Preparation)
 (hydroxy, complexes; preparation of ionic metal complexes)

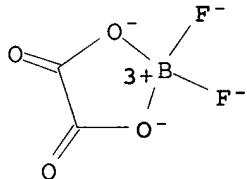
IT 244761-29-3P 321936-21-4P 321936-22-5P 409071-16-5P
 521065-36-1P 521065-37-2P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
 (Preparation)
 (preparation of ionic metal complexes)

IT 144-62-7, Oxalic acid, reactions 662-22-6, Hexafluoro-2-hydroxyisobutyric acid 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of ionic metal complexes)

IT 121-43-7 7446-70-0, Aluminum trichloride, reactions 10026-04-7,
 Silicon tetrachloride 10294-34-5
 RL: RGT (Reagent); RACT (Reactant or reagent)
 (preparation of ionic metal complexes)

IT 409071-16-5P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
 (Preparation)
 (preparation of ionic metal complexes)

RN 409071-16-5 HCPLUS
 CN Borate(1-), [ethanedioato(2-) - κ O1, κ O2]difluoro-, lithium,
 (T-4)- (9CI) (CA INDEX NAME)



● Li⁺

L3 ANSWER 21 OF 21 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2002:272911 HCPLUS
 DN 136:297397
 TI Electrolyte containing ionic metal complex for electrochemical device
 IN Tsujioka, Shoichi; Takase, Hironari; Takahashi, Mikihiro; Sugimoto, Hiromi; Koide, Makoto
 PA Central Glass Company, Limited, Japan
 SO Eur. Pat. Appl., 18 pp.

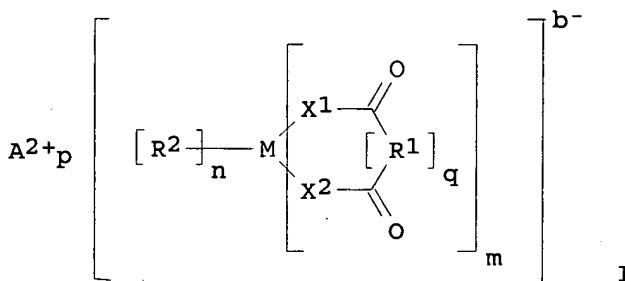
DT Patent
 LA English
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	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1195834	A2	20020410	EP 2001-123577	20011001
	EP 1195834	A3	20050831		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

	IE, SI, LT, LV, FI, RO			
JP 2002110235	A2	20020412	JP 2000-303437	20001003
JP 3722685	B2	20051130		
JP 2002184460	A2	20020628	JP 2000-376730	20001212
JP 2002184465	A2	20020628	JP 2000-376731	20001212
JP 2002373703	A2	20021226	JP 2001-177867	20010613
US 2002081496	A1	20020627	US 2001-969127	20011003
US 6783896	B2	20040831		
PRAI JP 2000-303437	A	20001003		
JP 2000-376730	A	20001212		
JP 2000-376731	A	20001212		
JP 2001-177867	A	20010613		

GI



AB The title electrolyte includes a first compound that is an ionic metal complex represented by the general formula (I). The electrolyte may further include at least one compound selected from second to sixth compds. resp. represented by the general formulas $\text{Aa}^+(\text{PF}_6^-)^a$, $\text{Aa}^+(\text{ClO}_4^-)^a$, $\text{Aa}^+(\text{BF}_4^-)^a$, $\text{Aa}^+(\text{AsF}_6^-)^a$, and $\text{Aa}^+(\text{SbF}_6^-)^a$, and special seventh to twelfth compds. The electrolyte can be superior in heat resistance, hydrolysis resistance, cycle characteristics and shelf life as compared with conventional electrolytes.

IC ICM H01M010-40

ICS C07F005-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s) : 76

ST battery electrolyte ionic metal complex; double layer capacitor electrolyte ionic metal complex

IT Capacitors

(double layer; electrolyte containing ionic metal complex for electrochem. device)

IT Battery electrolytes

Polymer electrolytes

(electrolyte containing ionic metal complex for electrochem. device)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(electrolyte containing ionic metal complex for electrochem. device)

IT Carbon black, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(electrolyte containing ionic metal complex for electrochem. device)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(electrolyte containing ionic metal complex for electrochem. device)

IT Secondary batteries

(lithium; electrolyte containing ionic metal complex for electrochem.

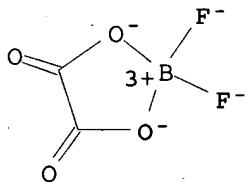
device)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6,
 Dimethyl carbonate 7439-93-2, Lithium, uses 12190-79-3, Cobalt lithium
 oxide colio2 12676-27-6 14283-07-9, Lithium tetrafluoroborate
 21324-40-3, Lithium hexafluorophosphate 25322-68-3, Peo 90076-65-6
 132843-44-8 176719-70-3 183006-07-7 183006-15-7 409071-17-6
 RL: DEV (Device component use); USES (Uses)
 (electrolyte containing ionic metal complex for electrochem. device)

IT 409071-16-5P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (electrolyte containing ionic metal complex for electrochem. device)

IT 24937-79-9, Pvdf
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte containing ionic metal complex for electrochem. device)
 IT 409071-16-5P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (electrolyte containing ionic metal complex for electrochem. device)

RN 409071-16-5 HCAPLUS
 CN Borate(1-), [ethanedioato(2-) - κ O1, κ O2]difluoro-, lithium,
 (T-4) - (9CI) (CA INDEX NAME)



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